

REMARKS

Upon approval of the undersigned's request to cancel the withdrawn claims and to add new claims 67–78, claims 1–13, 27–40, and 67–78 are pending. Previously examined claims 1–13 and 27–40 were rejected based primarily upon US Patent 5,031,983 to Dillon, Jr. et al. (DILLON). In light of the comments below (for all pending claims) and in light of the amendments to claims 27-40 respectfully mooted the rejection of those claims, the undersigned respectfully requests reconsideration of the rejections of the pending claims.

DILLON

DILLON teaches use of an optical isolator used at IR (e.g., telecommunications frequencies $\sim 1.3\mu\text{m}$ and $1.5\mu\text{m}$ – see, e.g., DILLON, col. 9, lines 49–62) and provides for application of constant predetermined magnetic field applied to a specific length of waveguide channel to invariably rotate forward propagating radiation by a constant amount. Traditionally, this rotation amount was about zero degrees to 45 degrees in the forward direction so reflected radiation back-reflected in the channel would be rotated from 45 degrees to ninety degrees and thus be isolated before adversely affecting the radiation source (typically a laser). DILLON does suggest use of an electromagnetic and as such typically includes an actuating current/voltage that the rejection equates with a control signal. The undersigned respectfully asserts that isolators are not considered modulators as that term is used in the application as filed.

Independent claim 1, original, was not amended as it is respectfully asserted that DILLON, even assuming *arguendo* that the characterization of the rejection is proper, fails to satisfy the limitations set forth in the claim in at least two respects as explained below.

Claim 1 includes: "... a transport influencer, operatively coupled to said optical transport **and having at least a portion integrated with one or more guiding regions of said one or more guiding regions**, for affecting said polarization property of said wave

component responsive to a control signal; and
a second element for interacting with said affected wave component **wherein an intensity of said wave component is varied responsive to said control signal**" (emphasis added).

In the case of integration, the electromagnetic is not shown in the figures and even assuming a broad sense of the term as used in the rejection, an electro-magnetic may be operatively coupled without being integrated and there is nothing suggesting integration of the electromagnetic to the guiding regions as set forth in claim 1.

Secondly, with respect to variation of the intensity of the wave component, the undersigned respectfully asserts that the rejection is impermissibly using hindsight in suggesting that DILLON varies an intensity of said wave component, even assuming that the other assertions are valid. For example, assuming *arguendo* that an ON-OFF switching of a power source to the electromagnetic provides an equivalent control signal that may be thought of as in some sense as varying. The electromagnetic is OFF in one mode and ON in the other mode. In the OFF mode, any propagating radiation signal would not be altered and in the ON mode, any propagating radiation signal would be shifted by the appropriate amount (traditionally 45 degrees as noted above).

If DILLON actually taught or suggested that the isolator would or could be used with the electromagnetic in the OFF mode, perhaps the rejection would have merit with respect to this point. However, there is nothing that the undersigned could locate suggesting that DILLON would/could ever be used with the electromagnetic in the OFF mode as doing so would defeat the entire point of the optical isolator. It is believed to be more probable that DILLON teaches only that radiation propagates only when the electromagnetic is in the ON mode (otherwise there would be the undesirable back-reflection that would not be blocked) and thus with only a single mode (i.e., ON) applicable to the case when radiation is propagating, there is, in fact, no intensity variation.

Thus the rejection is respectfully asserted to fail to present a *prima facie* case of obviousness and the undersigned respectfully requests that the rejection of claim 1 be withdrawn. Claims 2–13, dependent from claim 1, are at least patentable for the same reasons as discussed above with respect to claim 1.

The undersigned respectfully reserves the right to further differentiate the dependent claims upon any further rejection of claim 1.

With respect to amended independent claims 27 and 40, as amended (and new independent claim 67) these claims now expressly assert characteristics of an output wave component. For example, the output wave component is varied over a range of intensities responsive to a varying control signal – the range of intensities including an extinguished output wave component. DILLON does not teach, suggest, or motivate a mode where an output wave component varies over a range including an extinguished intensity level. DILLON would fail to be an isolator should it have an extinguishing mode for the output wave component for several reasons (e.g., DILLON preserves forward propagating radiation and extinguishing that is contrary to the teachings, and a primary way for DILLON to extinguish the forward propagating radiation would be to rotate the polarization angle 90 degrees in the forward direction – however the backward propagating radiation would then be rotated a full 180 degrees and thus not be blocked and hence interfere with the radiation source as expressly necessary in an isolator device).

Additionally, claims 40 and 67 now expressly recite that the influencer or variable magnetic field generating structure be “integrated” with the waveguide during manufacture. This feature is not taught or suggested by DILLON and it is respectfully asserted that to do so, if at all possible or suggested, would make the isolator too expensive without any explained advantage. The dependent claims are all patentable at least for the reasons as their independent claims. The undersigned respectfully reserves the right to further differentiate the dependent claims upon any further rejection of these independent claims.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

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